LONG-TERM TRENDS OF POPs IN HUMAN MILK IN CZECH REPUBLIC & APPLICATION FOR HUMAN HEALTH RISK ASSESSMENT

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Background and Aims: Human biomonitoring of persistent organic pollutants (POPs) concentrations in breast milk in Czech Republic is carried out since 1994 (by **National Institute of Public Health** - NIPH). The main aim of this study was to evaluate long-term trends of selected POPs in human milk in Czech Republic – as background levels for central Europe for use in the project ArcRisk (http://www.arcrisk.eu/).

Methods: All milk samples are obtained under the **Environmental Health Monitoring System in the Czech Republic**. The human milk samples are analyzed for a number of chlorinated organic chemicals including polychlorinated biphenyls (PCB28, PCB52, PCB101, PCB118, PCB138, PCB153, PCB180, PCB170) and selected chlorinated pesticides (OCPs: HCB, alfa-HCH, beta-HCH, gama-HCH, ppDDD, opDDE, ppDDE, opDDT, ppDDT).

Results: More then 4600 breast milk samples were collected and analysed from 9 sites in the years 1994 – 2009 (about 50-200 samples/region/year). Exposure factors that may influence these levels were investigated using a questionnaire according to the WHO protocol (age of mothers, BMI – body mass index, medication, occupational exposure and lifestyle habits, above all smoking). Backward predictions of the internal total POPs exposure doses from human milk concentrations were computed. These dangerous organic substances (neurotoxicity, carcinogenicity and endocrine disrupting effects) are widespread throughout the environment, persisting for decades. They accumulate in the fatty tissue, entering the human body through the food-chain.

Conclusions: Human biomonitoring is a useful tool to evaluate internal exposure of humans with different chemical substances. The next aim of this work will to predict of human health risks by using of slope factor and RfD (reference doses) approach with a spatial GIS visualisation. Relationships between exposure factors from questionnaires will be also investigated. The research was supported by the CETOCOEN project from the European Regional Development Fund (No. CZ.1.05/2.1.00/01.0001) and by the ArcRisk European Community 7th Framework Programme Project (226534).